

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for making a magnetic sensor, the method comprising the steps of:

 fabricating a giant magnetoresistive stack on a surface of a layer of bottom shield material, the giant magnetoresistive stack including an etch stop layer positioned on an end of the giant magnetoresistive stack opposite the surface of the wafer layer of bottom shield material and a buffer layer positioned on the etch stop layer;

 depositing an insulating material on the giant magnetoresistive stack and the surface of the layer of bottom shield material;

 planarizing the insulating material to form a top surface of the insulating material lying in a plane adjacent to or passing through the buffer layer, leaving at least a portion of the buffer layer on the etch stop layer;

 etching the portion of the buffer layer to the etch stop layer; and

 depositing a top shield layer on the insulating material and the giant magnetoresistive stack, the top shield layer making electrical contact with the giant magnetoresistive stack.

2. (Previously Presented) A method for making a magnetic sensor according to claim 1, wherein the step of planarizing the insulating material is performed using chemical machining polishing.

3. (Previously Presented) A method for making a magnetic sensor according to claim 1, wherein the step of planarizing the insulating material is performed using a vacuum etch process.

4. (Previously Presented) A method for making a magnetic sensor according to claim 1, the method further comprising the step of:

 etching the etch stop layer prior to the step of depositing the top shield layer on the insulating material and the giant magnetoresistive stack.

5. (Previously Presented) A method for making a magnetic sensor according to claim 1, wherein:

the insulating material comprises a material selected from the group of Al₂O₃, AlN, AlON, SiO₂, SiN and SiON.

6. (Previously Presented) A method for making a magnetic sensor according to claim 1, wherein:

the etch stop layer comprises a material selected from the group of Au, Cu, NiFe, CoFe, NiCoFe, Al₂O₃, and Ta.

7. (Previously Presented) A method for making a magnetic sensor according to claim 1, wherein:

the buffer layer comprises a material selected from the group of Ta, W, Ti, Cu, SiO₂ and SiN.

8. (Withdrawn) A magnetic sensor made in accordance with the method of claim 1.

9. (Withdrawn) A method for making a magnetic sensor for a disk drive read head, the method comprising the steps of:

fabricating a giant magnetoresistive stack on a surface of a layer of bottom shield material;

depositing an insulating material on the giant magnetoresistive stack on the surface of the layer of bottom shield material;

depositing a self-planarizing material on the insulating material;

planarizing the self planarizing material and the insulating material using a vacuum etch process that removes the self planarizing material and the insulating material at the same rate until a surface of the insulating material lies in a plane adjacent to an end of the giant magnetoresistive stack; and

depositing a top shield layer on the insulating material and the giant magnetoresistive stack.

10. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 9, wherein:

the insulating material comprises a material selected from the group of

alumina, SiO_2 , SiN .

11. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 9, wherein:

the self-planarizing material comprises a material selected from the group of a spin on glass and a photo resist.

12. (Withdrawn) A magnetic sensor made in accordance with the method of claim 9.

13. (Withdrawn) A method for making a magnetic sensor for a disk drive read head, the method comprising the steps of:

fabricating a giant magnetoresistive stack on a surface of a layer of bottom shield material, the giant magnetoresistive stack including an etch stop layer positioned on an end of the giant magnetoresistive stack opposite the surface and a buffer layer positioned on the etch stop layer;

depositing an insulating material on the giant magnetoresistive stack and the surface of the layer of bottom shield material;

depositing a self-planarizing material on the insulating material;

planarizing the self-planarizing material and the insulating material using chemical machining polishing to form a top surface of the insulating material lying in a plane adjacent to or passing through the buffer layer;

etching the buffer layer; and

depositing a top shield layer on the insulating material and the giant magnetoresistive stack, the top shield layer making electrical contact with the giant magnetoresistive stack.

14. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 13, the method further comprising the steps of:

etching the etch stop layer prior to the step of depositing a top shield layer on the insulating material and the giant magnetoresistive stack.

15. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 13, wherein:

the insulating material comprises a material selected from the group of

Al₂O₃, AlN, AlON, SiO₂, SiN and SiON.

16. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 13, wherein:

the etch stop layer comprises a material selected from the group of Au, Cu, NiFe, CoFe, NiCoFe, Al₂O₃, and Ta.

17. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 13, wherein:

the buffer layer comprises a material selected from the group of Ta, W, Ti, Cu, SiO₂ and SiN.

18. (Withdrawn) A magnetic sensor made in accordance with the method of claim 13.

19. (Withdrawn) A method for making a magnetic sensor for a disk drive read head, the method comprising the steps of:

fabricating a giant magnetoresistive stack on a surface of a layer of bottom shield material;

depositing a self-planarizing material on the giant magnetoresistive stack on the surface of the layer of bottom shield material;

planarizing the self planarizing material using a vacuum etch process that removes the self planarizing material until a surface of the self planarizing material lies in a plane adjacent to an end of the giant magnetoresistive stack; and

depositing a top shield layer on the self-planarizing material and the giant magnetoresistive stack.

20. (Withdrawn) A method for making a magnetic sensor for a disk drive read head according to claim 19, wherein:

the self-planarizing material comprises a material selected from the group of a spin on glass and a photo resist.

21. (Withdrawn) A magnetic sensor made in accordance with the method of claim 19.

22. (Withdrawn) A method for making a magnetic sensor according to claim 1, wherein the step of planarizing the insulating material comprises the steps of:

depositing a self-planarizing material on the insulating material; and
planarizing the self-planarizing material and the insulating material using
a vacuum etch process that removes the self-planarizing material and the insulating
material at the same rate until a surface of the insulating material lies in a plane adjacent
to an end of the giant magnetoresistive stack.

23. (Withdrawn) A method for making a magnetic sensor according to
claim 22, wherein:

the self-planarizing material comprises a material selected from the group
of a spin on glass and a photo resist.